



ENERGY STAR Products Partner Meeting

Our Work is not Done on Transforming the U.S. Market to Efficient Lighting

Monday October 23, 2017

Chicago IL

ENERGY STAR. The simple choice for energy efficiency.



ENERGY STAR® PRODUCTS PARTNER MEETING

Appliances | Electronics | HVAC | Lighting | Water Heaters

2017 ENERGY STAR® PRODUCTS PARTNER MEETING

The simple choice for energy efficiency.



Monday, Oct 23

Wi-Fi

Network:
2017ENERGYSTARMEETINGS

Passcode:
2017ESTAR

Polling
www.slido.com
#ESPPM

	Lighting <i>Chicago Ballroom VI & VII, Level 4</i>	Networking* <i>Levels 2 & 3</i>	EXPO <i>Riverwalk A & B</i>
9:00–10:00 a.m.			
10:00–11:30 a.m.	Lighting Plenary: Our Work is Not Done		
11:30 a.m.–12:30 p.m.	Reaching the Consumer in a Changing Lighting Landscape		
12:30–1:30 p.m.	Lunch— <i>Riverwalk A & B, Level 1</i>		
1:30–2:30 p.m.	Dimming LED Lights: Insights and Solutions		
2:30–3:30 p.m.	Getting Technical with Taylor & The Dans		
3:30–3:45 p.m.	Break— <i>Riverwalk A & B, Level 1</i>		
3:45–4:15 p.m.	ENERGY STAR Partner of the Year Awards: Tips for Applying (General)		
4:15–4:45 p.m.	ENERGY STAR Tools		
4:45–5:45 p.m.	ENERGY STAR Retail Products Platform Networking and Q&A		

Celebrate ENERGY STAR Day!
ON OCTOBER 24

Share this link on Facebook:
bit.ly/ltmvideo



Tag @ENERGYSTAR
Use #LightTheMoment

Join the social media takeover by sharing the [Light the Moment](#) video on Tuesday. Visit the ENERGY STAR table if you have any questions.

Tuesday quick highlights

- 8:30-9 ENERGY STAR program update from EPA leadership
- 9-9:45 ENERGY STAR Promotions and Lighting Challenge
- 10-11 Residential Product Specification Update – Plans for 2018
- 11-12:30 Connected Products Workshop



Polling and Q&A

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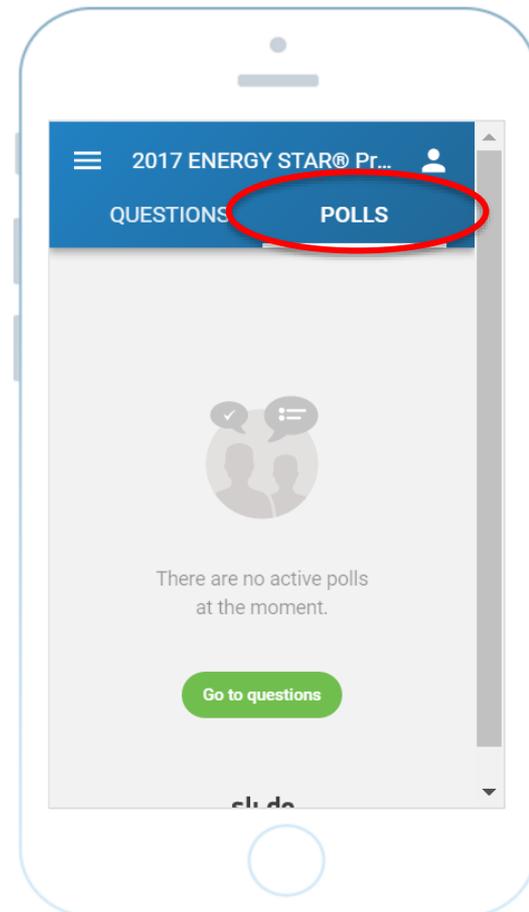
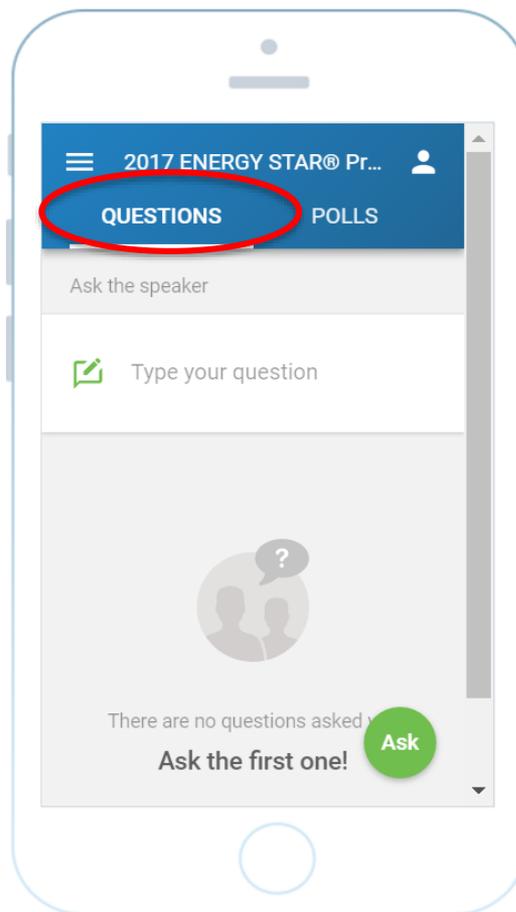
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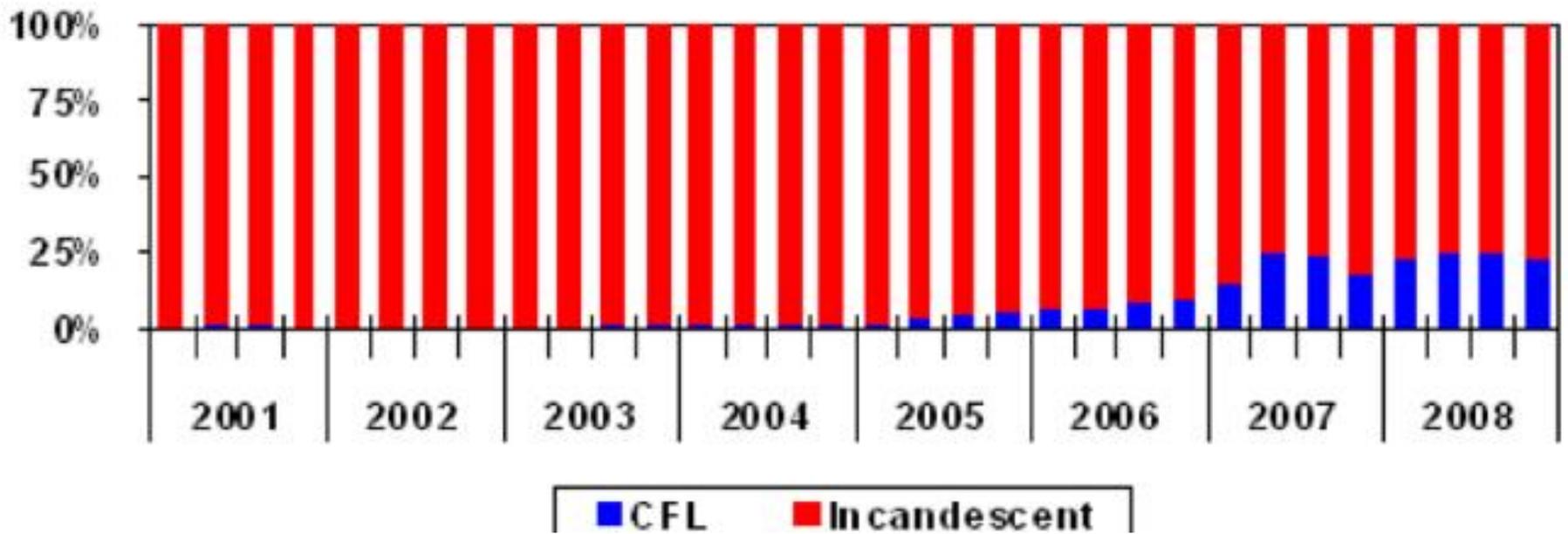
Plenary Overview

- Market update
- Trends in sales data and what they say about utility programs and ENERGY STAR – Scott Dimetrosky
- What is happening in federal and state standards? Practical things program administrators can do in the next few years – Claire Miziolek
- What does market transformation look like? –Alexis Allan
- Lighting promotions and marketing update – Dan Cronin





Market Penetration (in %)





EPA's NEW Report: The Light bulb Revolution

- [Energystar.gov/bulbrevolution](http://energystar.gov/bulbrevolution)



The screenshot shows the Energy Star website with the following content:

- Header: ABOUT ENERGY STAR PARTNER RESOURCES
- Navigation: ENERGY EFFICIENT products, ENERGY SAVINGS at home, ENERGY EFFICIENT new homes, ENERGY STRATEGIES FOR buildings & plants
- Breadcrumbs: Home > Certified Products > New Report Predicts Widespread Adoption of LED Technology by 2020
- Section: Certified Products (Your source for energy efficient product information)
- Sub-navigation: All Certified Products, Appliances, Lighting, Office Equipment, Electronics, Product Specifications Search
- Article Title: New Report Predicts Widespread Adoption of LED Technology by 2020
- Text: American consumers are about to experience a game-changer in terms of lighting their homes, as LED bulbs become the dominant light bulb technology within the next three years.
- Text: Once thought to be a lighting technology only for early adopters willing to pay top dollar, LED bulbs are now a possibility for the average consumer, with prices hovering around \$2 per bulb across the country, and as low as \$1 or less in many areas. Using less energy, the bulbs pay for themselves in a matter of months, and can save households \$50-\$100 per year in utility costs.
- Text: LED bulbs will see widespread adoption by 2020 in significant part because of utility programs across the country continuing to rebate the bulbs and educate consumers about the energy efficient options that are available.
- Text: Despite the tremendous savings opportunity, many Americans have yet to experience the LED difference in their own homes. Today 71% of homes have no LED bulbs in use, and according to a report by ORC International, most consumers have little knowledge about the benefits that bulbs can offer.
- Image: Small thumbnail of the report cover.
- Text: EPA's 2017 report, "The Light Bulb Revolution" details a short history of light bulb technology, options for consumers today, major market shifts, and data showing we are just scratching the surface with this promising new technology.
- Text: The Light Bulb Revolution (PDF, 4.2 MB)
- Section: RELATED RESOURCES
 - Best Value Finder
 - Choose A Light
 - ENERGY STAR Light Bulb Purchasing Guide (PDF, 652 KB)
 - Set the Mood: Dimmable ENERGY STAR LED Bulbs
 - Ask the Expert: How to Choose a Light Bulb

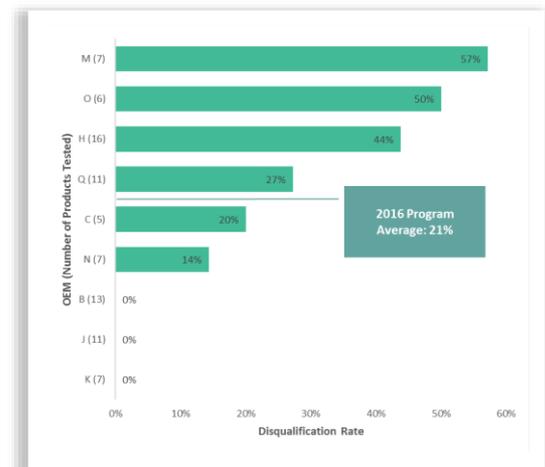
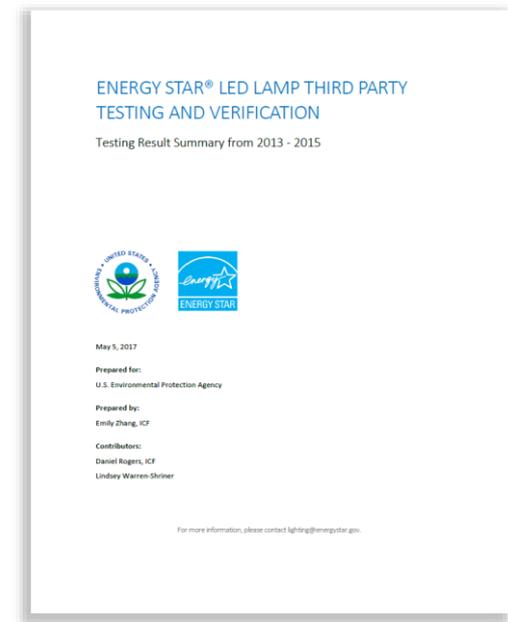
The screenshot shows a tweet from CEE @CEE1Forum dated Oct 13. The text of the tweet is: "New today: @ENERGYSTAR 's market report on how #LEDLighting is changing the game! Read 'The Light Bulb Revolution':". Below the text is a preview of the report with the title "New Report Predicts Widespread Adoption of LED ..." and a snippet of text: "American consumers are about to experience a game-changer in terms of lighting their homes, as LED bulbs become the dominant light bulb technology within the... energystar.gov".



Progress in Verification Testing

- To date, ENERGY STAR has tested
 - **924** Fixtures, 9% disqualification rate (28 open cases)
 - **500** LED bulbs, 13% disqualification rate (14 open cases)
 - **656** CFLs, 27% disqualification rate overall
 - Disqualification rates by OEM ranged from 0% - 86%
 - Disqualification rates for CFLs have decreased by nearly half since EPA initiated enhanced oversight.
- ENHANCED OVERSIGHT:** Since 2013, EPA has issued individual notices to OEMs of their annual testing performance, provided greater oversight of products associated with OEMs with high failure rates, and sought additional quality assurance information for labelers using products from those sources.
 - CFL disqualification rates fell from **30%** in 2013 to **17%** in 2014 & 2015.
 - 4/5 of the worst performing OEMs exited the ENERGY STAR market.

More at www.energystar.gov/integrity





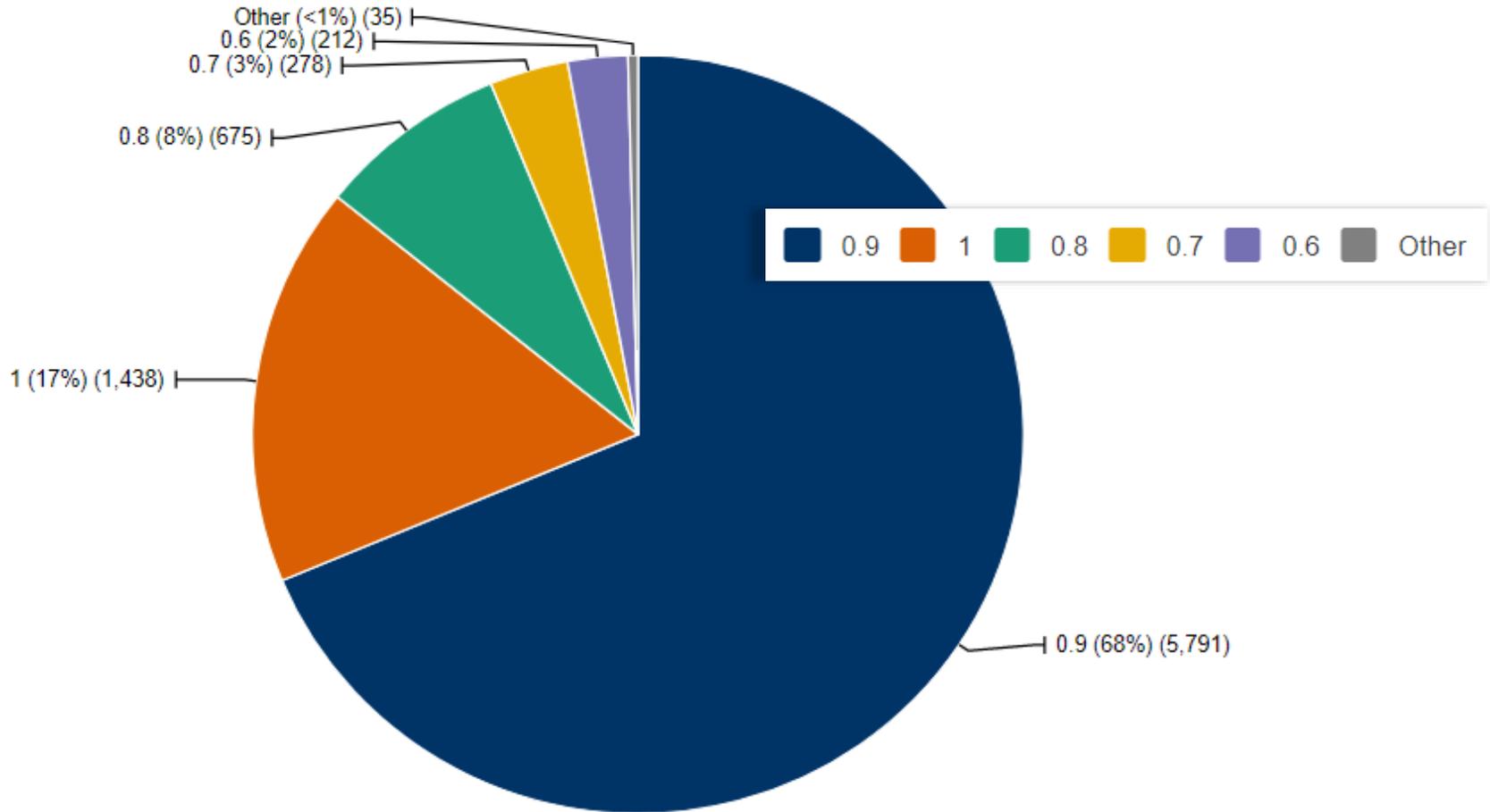
Latest Stats on ENERGY STAR Lighting

- LAMPS
 - More than 8,400 lamps (22 CFLs, 13 Connected, 300 Filament Style)
 - 99% are dimmable, 47% rated for enclosed fixtures
 - The highest efficacy is 133 lumens per watt (lm/w)
 - More than 900 products 100 lm/w or greater (12%)
 - 230 partners with 289 brands
- LUMINAIRES
 - More than 15,600 products (252 Connected, less than 2% fluorescent)
 - Most efficacious product is 143 lm/w →
 - More than 1,127 products 100 lm/w or greater (7% of certified fixtures)
 - 409 partners with 636 brands
- Both specs up for review in 2018...





Latest Stats ENERGY STAR Lamps: 85% PF ≥ 0.9 and 96% ≥ 0.7

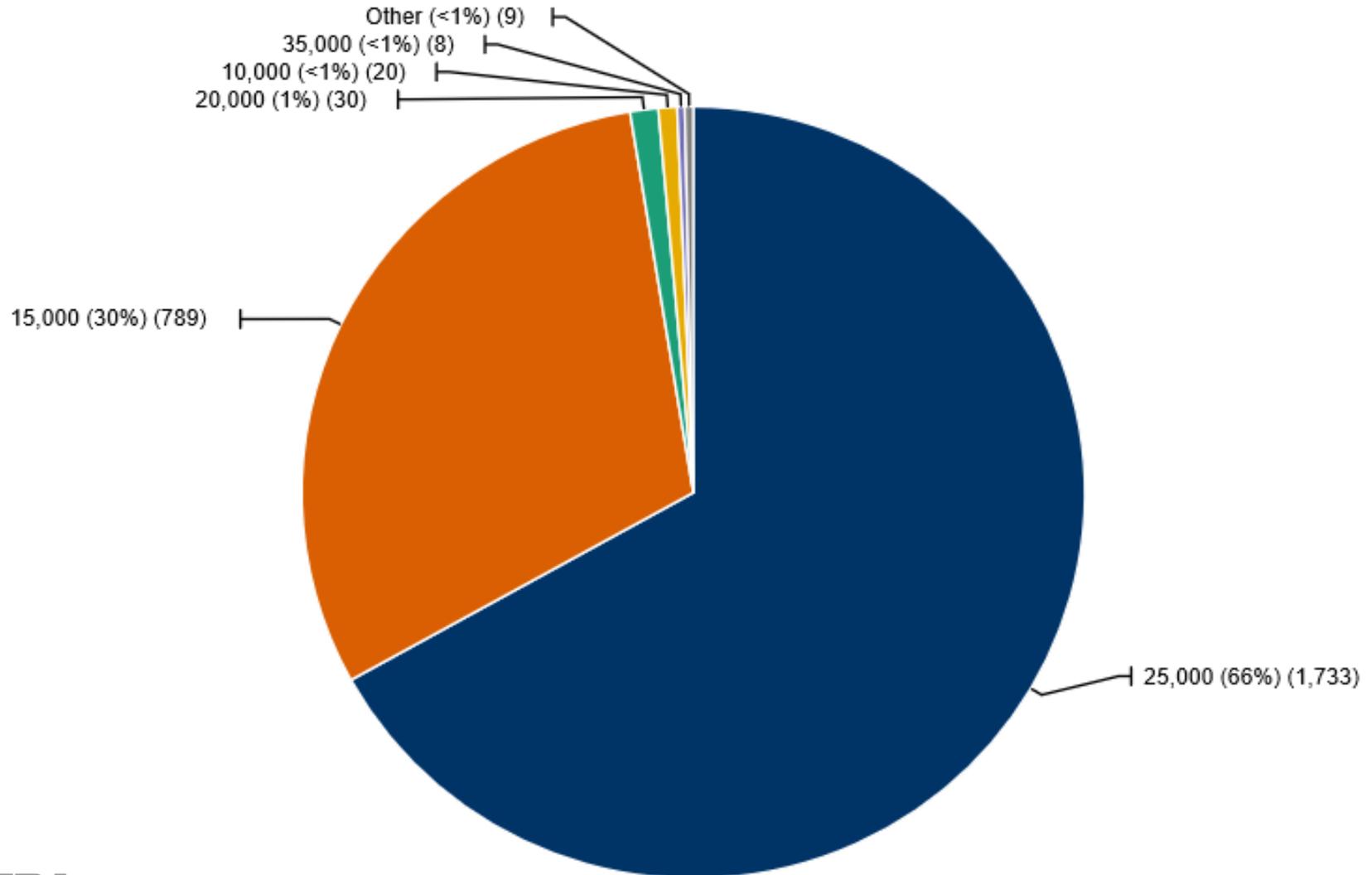


AllPowerFactor | ENERGY STAR

<https://data.energystar.gov/Active-Specifications/AugLampsAllPowerFactor/brd3-54cn>

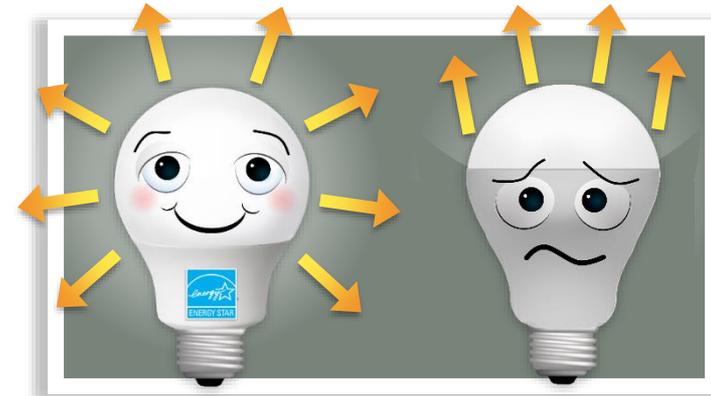


Omnidirectional (A lamps) Rated Lifetime



ENERGY STAR Certification for Lighting Products

- Designed to ensure quality and performance consumers expect:
 - 6 different requirements for color to ensure quality up front & over time
 - Light output and distribution requirements
 - Bulb size + shape requirements
 - Long term high heat testing and temperature testing of critical components (**9 months of bulb testing**)
 - Dimming and flicker testing
 - Minimum warranty requirement
 - Independent third-party certification and verification testing help confirm delivery on performance



Methods of measurement and reference documents



2014/04/07

Organization	Identifier	Description
ANSI	C78.375-2001	Specifications for the Chromaticity of Fluorescent Lamps
ANSI/NEMA/ANSLG	C78.377-2011	Specifications for the Chromaticity of Solid State Lighting Products
ANSI	C78.5-2003	Specifications for Performance of Self-ballasted Compact Fluorescent Lamps
ANSI/ANSLG	C78.81-2010	Double-Capped Fluorescent Lamps—Dimensional and Electrical Characteristics
ANSI	C78.901-2014	Single-Based Fluorescent Lamps—Dimensional and Electrical Characteristics
ANSI/ANSLG	C81.61-2009	Specifications for Bases (Caps) for Electric Lamps
ANSI/ANSLG	C81.62-2009	Lampholders for Electric Lamps
ANSI	C82.11-2011	High-Frequency Fluorescent Lamp Ballasts
ANSI/ANSLG	C82.16-2015 (anticipated)	Light Emitting Diode Drivers—Methods of Measurement
ANSI	C82.2-2002	Method of Measurement of Fluorescent Lamp Ballasts
ANSI	C82.77-10-2014	Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment
ANSI/IEEE	C62.41.1-2002	IEEE Guide on the Surge Environment in Low-Voltage (1000 V and Less) AC Power Circuits
ANSI/IEEE	C62.41.2-2002	IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000V and Less) AC Power Circuits
ANSI/UL	153-2002	Standard for Safety of Portable Electric Luminaires
ANSI/UL	935-2009	Standard for Safety of Fluorescent-Lamp Ballasts
ANSI/UL	1310-2010	Standard for Safety of Class 2 Power Units
ANSI/UL	1574-2004	Standard for Safety of Track Lighting Systems
ANSI/UL	1588-2008	Standard for Safety of Luminaires
ANSI/UL	1598C	Light-Emitting Diode (LED) Retrofit Luminaire Conversion Kits
ANSI/UL	1598B-2010	Standard for Supplemental Requirements for Luminaire Reflector Kits for Installation on Previously Installed Fluorescent Luminaires
ANSI/UL	1993-2009	Standard for Safety of Self-Ballasted Lamps and Lamp Adapters
ANSI/UL	2108-2004	Standard for Low-Voltage Lighting Systems
ANSI/UL	8750-2009	Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products
ASTM	E283-04	Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
CIE	Pub. No. 13.3-1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE	Pub. No. 15-2004	Colorimetry
EU	Directive 2002/95/EC	Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
FCC	CFR Title 47 Part 15	Radio Frequency Devices
FCC	CFR Title 47 Part 18	Industrial, Scientific, and Medical Equipment
IEC	60061-1 (2012)	Lamp Caps and Holders Together with Gauges for the Control of Interchangeability and Safety – Part 1: Lamp Caps
IEC	60081 Amend 4 Ed 5.0 (2010)	Double-capped Fluorescent Lamps - Performance Specifications
IEC	60901 (2011)	Single-capped Fluorescent Lamps - Performance Specifications
IEC	62301 ED 2.0 B:2011	Household electrical appliances - Measurement of standby power
IEC	61347-2-3-am2 ed1.0 b.2011	Amendment 2 - Lamp Control Gear - Part 2-3: Particular Requirements for A.C. Supplied Electronic Ballasts for Fluorescent Lamps
IEC	62321 Ed. 1.0	Electrotechnical Products - Determination Of Levels Of Six Regulated Substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers)
IEEE	PAR1789	IEEE Recommending Practices for Modulating Current in High Brightness LEDs for Mitigating Health Risks to Viewers
IES	LM-9-09	Electric and Photometric Measurements of Fluorescent Lamps
IES	LM-10-96 or LM-10-XX	Photometric Testing of Outdoor Fluorescent Luminaires (2015 update anticipated)
IES	LM-31-95	Photometric Testing of Roadway Luminaires Using Incandescent Filament and High Intensity Discharge (HID) Lamps
IES	LM-40-10	Life Testing of Fluorescent Lamps
IES	LM-41-14	Approved Method for Photometric Testing of Indoor Fluorescent Luminaires
IES	LM-46-04	Photometric Testing of Indoor Luminaires Using High Intensity Discharge or Incandescent Filament Lamps
IES	LM-49-12	Life Testing of Incandescent Filament Lamps
IES	LM-56-13	Method for Spectroradiometric Measurement Methods for Light Sources
IES	LM-55-14	Life Testing of Compact Fluorescent Lamps
IES	LM-56-14	Electrical and Photometric Measurements of Single-Ended Compact Fluorescent Lamps
IES	LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products
IES	LM-80-08	Measuring Lumen Maintenance of LED Light Sources
IES	LM-82-12	Method for the Characterization of LED Light Engines and Integrated LED Lamps for Electrical and Photometric Properties as a Function of Temperature
IES	LM-84-14	Measuring Luminous Flux and Color Maintenance of LED Lamps, Light Engines, and Luminaires
IES	RP-16-10	Nomenclature and Definitions for Illuminating Engineering
IES	TM-21-11	Projecting Long Term Lumen Maintenance of LED Sources
IES	TM-28-14	Projecting Long-Term Luminous Flux Maintenance of LED Lamps and Luminaires
NEMA	LL 9-2009	Dimming of T8 Fluorescent Lighting Systems
NEMA	LSD 4S-2009	Recommendations for Solid State Lighting Sub-Assembly Interfaces for Luminaires
NEMA	SSA 7A-2013	Phase Cut Dimming for Solid State Lighting: Basic Compatibility

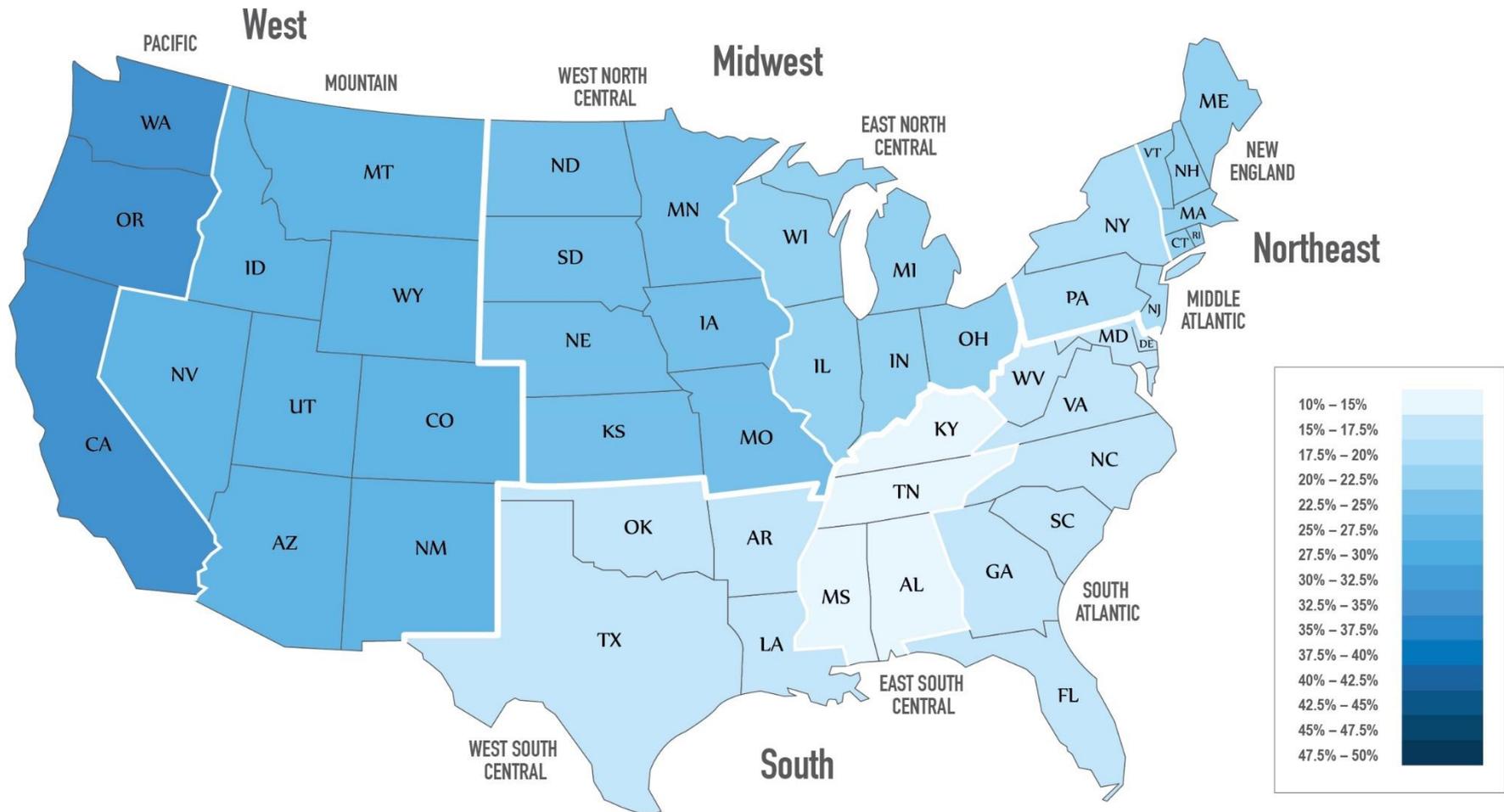


What is happening in
the lighting market??





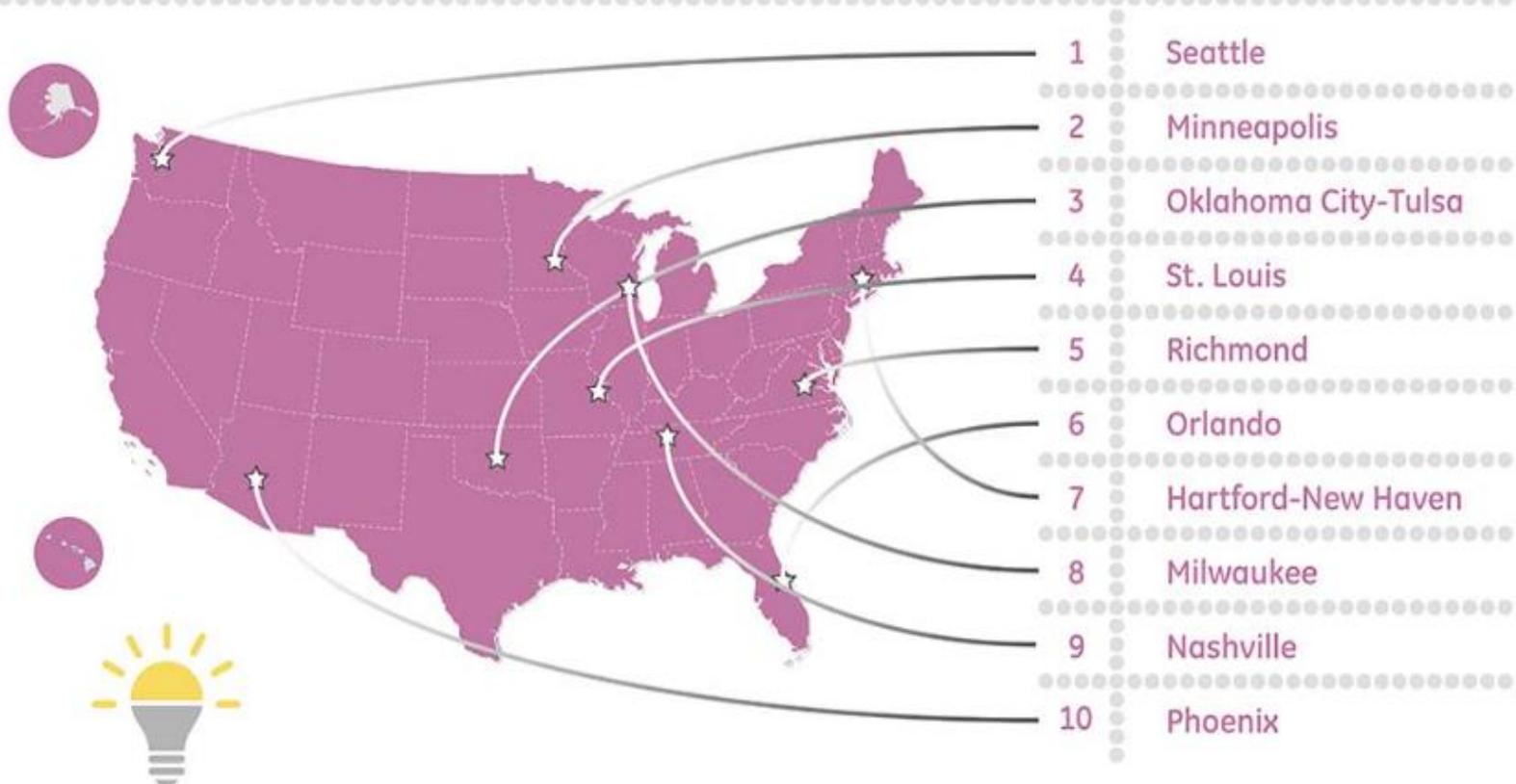
2015-2016 LED Bulb Sales (as a Percentage of other bulb technologies sold)



2016 Top Ten LED Adopting Cities (From GE & Homescan data)

Top 10 LED Cities

More residents purchased LED bulbs in these cities than any other U.S. Markets





2017 Trends

- ENERGY STAR Lamps V2.0 and 2.1 went into effect January, October
- ENERGY STAR LED bulbs retailing as low as \$0.99 with rebates

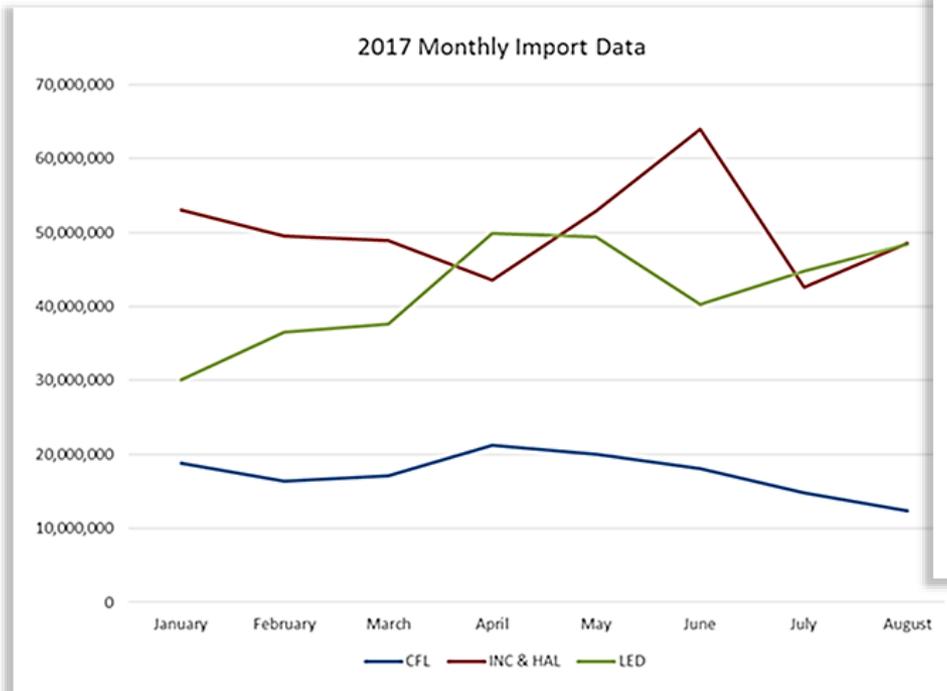


FIGURE 13

ENERGY STAR Lamp Efficacy Requirements

SOURCE: EPA, Energy Star Specifications

* Varies by CRI
** Varies by wattage

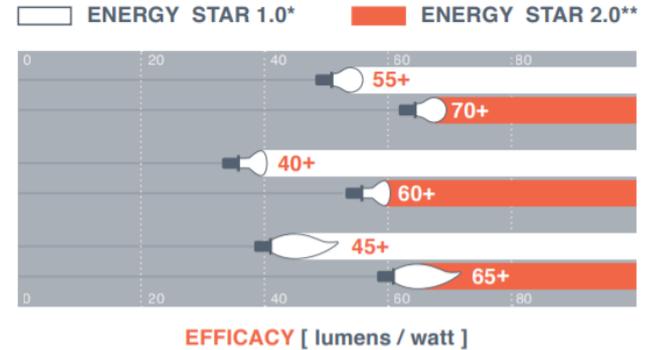
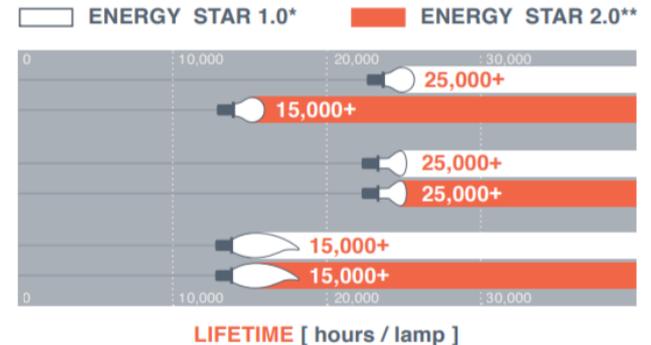


FIGURE 14

ENERGY STAR Lamp Lifetime Requirements

SOURCE: EPA, Energy Star Specifications

* Varies by CRI
** Varies by wattage



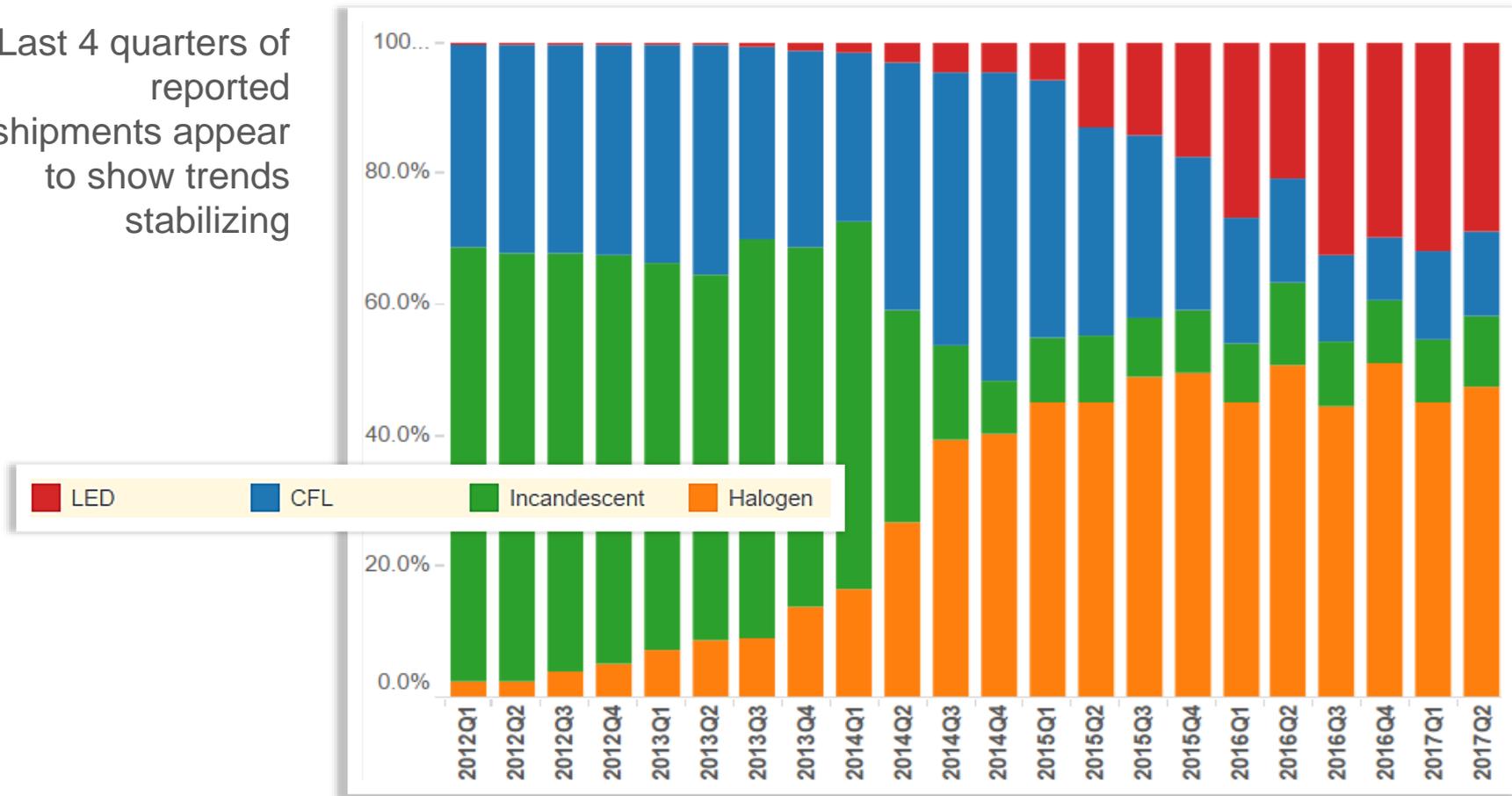
Source: BPA 2017 Market intel Booklet



NEMA A Lamp Indices

Last 4 quarters of reported shipments appear to show trends stabilizing

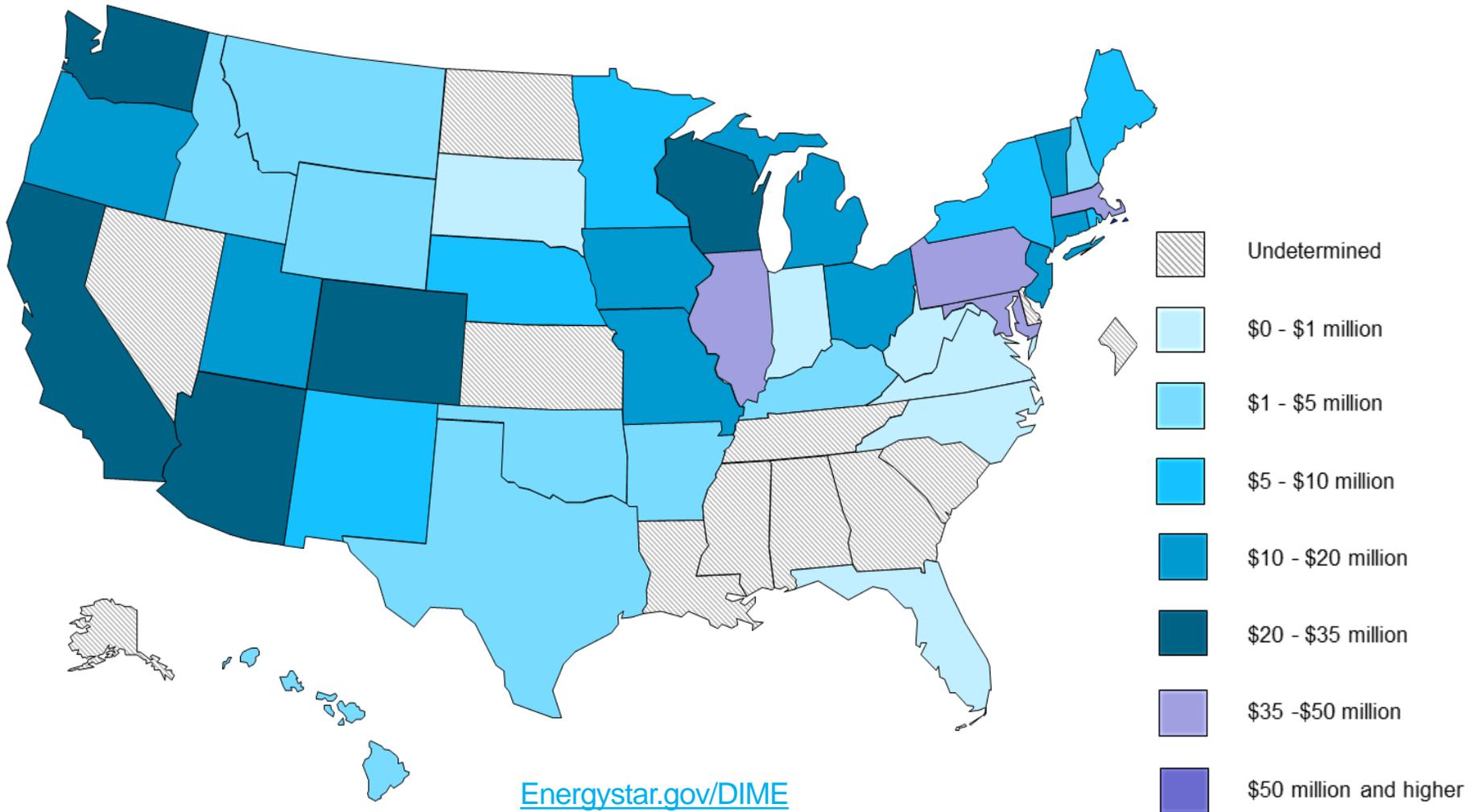
Market Penetration (in %)



<http://NEMA.org/Intelligence/Pages/Lamp-Indices.aspx>



2017 map of utility incentives for ENERGY STAR lighting



Quick Peek at PGE territory from on-site energy audits of >1000 homes

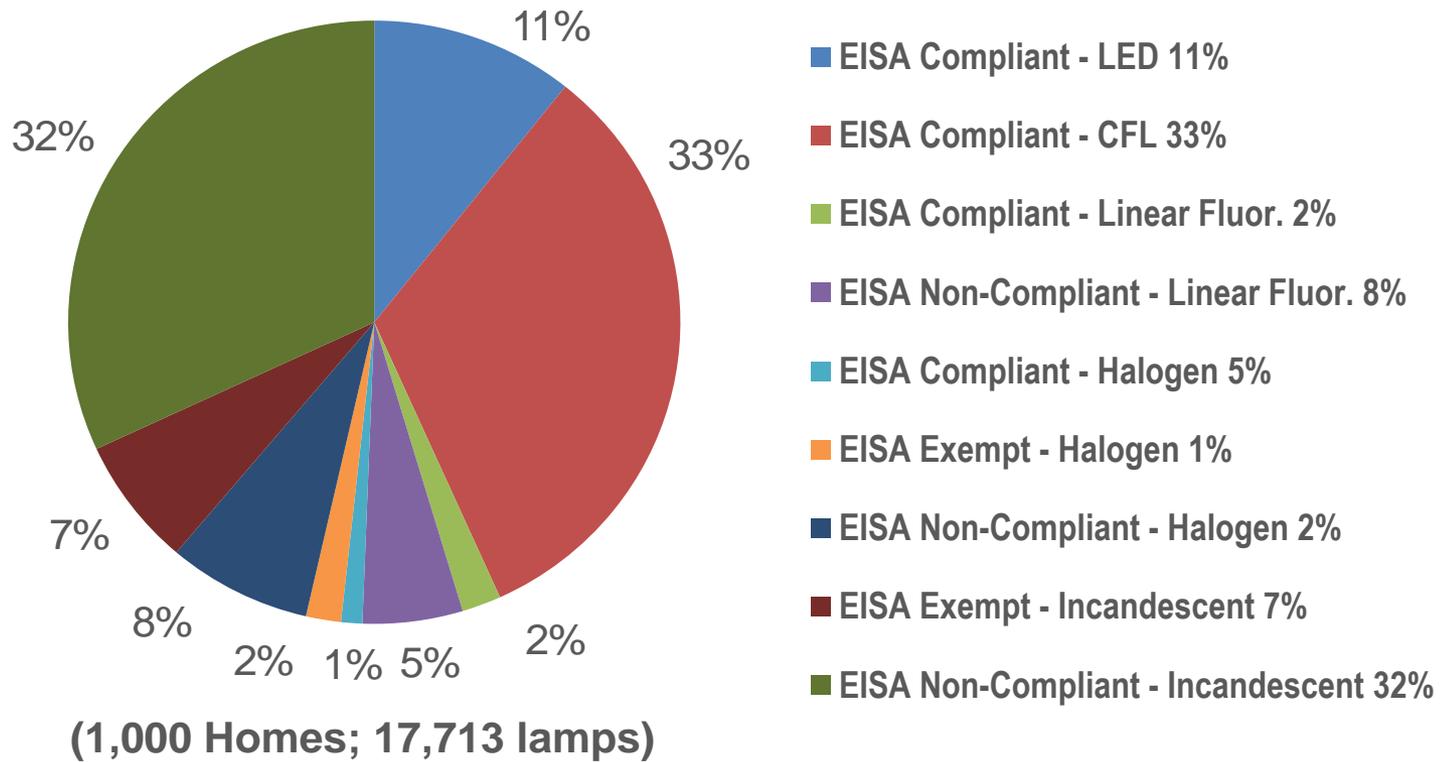
- CA implemented EISA 2 years before the rest of the country
- Have had aggressive incentive programs for many years, and
- PGE territory has a generally early adopting, environmentally conscious population compared to the rest of the U.S.
 - Bay Area and Non-Bay Area
 - Single family sites (n = 608)
 - Multi-family sites (n = 385)

(Results are preliminary – pending ongoing QC)





Preliminary results reveal in 2016, PG&E territory: **47%** sockets are filled with Halogen or Incandescent





**About 60% of
residential U.S. sockets
still contain an
inefficient light bulb.**



**If all light bulbs sold
in the United States in
2017 were ENERGY STAR
certified, the cost savings
would grow to more than
\$4 billion each year**

ENERGY STAR. The simple choice for energy efficiency.



